

ABSTRACT

EFFECTIVENESS OF ALENDRONATE PELLET ADMINISTRATION IN BONE DEFECT DUE TO FRACTURE OF OSTEOPOROSIS

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Alendronate is bisphosphonate drug for osteoporosis therapy in postmenopause women to reduce risk of fracture. Orally alendronate administration have poor absorption resulting in low bioavailability, and have adverse side effect such as nausea, dyspepsia, gastric irritation and osteonecrosis of jaw. To resolve fractures related the osteoporosis, it must give alendronate with local drug delivery system. Alendronate giving locally not only contain of drugs, but also contain carrier of alendronate that *bovine hydroxyapatite* and gelatin. Beside can act as carrier of alendronate, the function of them as filler bone defect of fracture cause of osteoporosis. The ingredients use are BHA: Gelatin (10:1) and Alendronat 10%.

The aim of this research to test the effectivity of alendronate pellet in fracture cause of osteoporosis with ovariectomy rat model. Rat that carried the ovariectomy in the day 8, then drilled in the femur with 2,2 mm and given treatment in each group. After determination, the femur was carried in the week 6 after drilled. The parameter use are measure reduction of bone defect with radiology and see the new growth of bone cell which is marked with some osteoblast, osteosit and osteoclast in the *Hematoxylin-Eosin* preparat under light microscope.

The result shows that there is no significant differences in the end of diameter bone defect and the growth cells of osteoblast, osteosit and osteoclast between BHA-Gelatin group and BHA-Gelatin-Alendronate group. The average of end of diameter bone defect on BHA-Gelatin group is 1.678 ± 0.006 and BHA-Gelatin-Alendronate group is 1.765 ± 0.046 . The analysis result of osteoblast, osteosit and osteoclast cells between BHA-Gelatin group and BHA-Gelatin-Alendronate group are 0.302; 0.072; 0.963. Based on the result, shows that alendronate pellet has not been proven in significant which has effect measurement of reduction the bone defect and new growth bone cell.

Keyword : Alendronate, Osteoporosis, Ovariectomy, *Bovine Hydroxyapatite*, Gelatin.